

POTENTIAL OF LEAF DOMATIA AS STABLE MORPHO-
ANATOMICAL MARKER OF FOUR LOCAL
COFFEA SPECIES

THESIS

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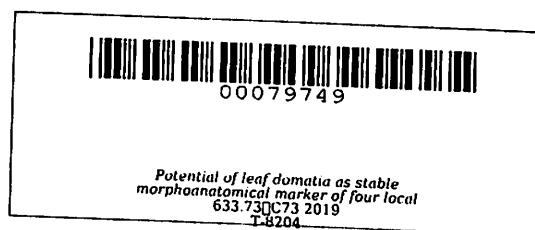
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**POTENTIAL OF LEAF DOMATIA AS STABLE MORPHO-ANATOMICAL
MARKER OF FOUR LOCAL *COFFEA* SPECIES**

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ABSTRACT

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Rubiaceae is a plant family that is known to possess small leaf cavities called domatia which are usually associated with beneficial mites or insects. However, less is known about the morphoanatomy of this structure in one of its member genera, the *Coffea*. This study was conducted to explore the potential of leaf domatia as stable morpho-anatomical marker of the four *Coffea* species in Cavite, namely: *C. arabica*, *C. canephora*, *C. liberica*, and *C. liberica* var. *dewevrei*. Specifically, it aimed to describe the leaf domatia of four local *Coffea* species based on morphology and anatomy, compare the documented leaf domatia characters among the four local *Coffea* species, compare the leaf domatia characters of *C. arabica* leaves collected from Cavite and Benguet, and establish an identification key for the four *Coffea* species using the morphological and anatomical characters of their leaf domatia.

Leaves were examined morphologically in terms of domatium type, position, area, and distribution and anatomically in terms of occurrence of hairs, hair type, and hair position.

Observations revealed that leaf domatia of the four *Coffea* species shared almost similar morphological characteristics. All species were dominated by pit domatia which were positioned along the midrib and junctions of secondary veins. These domatia usually measured 1x1 mm². Anatomically, all the four species exhibited the presence of trichomes.

These hairs were of unicellular type. The sole difference that was recorded for the four *Coffea* species was the positioning of hairs in the domatium. This trait was utilized for the synthesis of a dichotomous key that would help in identifying these four *Coffea* species. *C. arabica* is characterized by having trichomes positioned outside the domatium, around or atop the site of entry. The trichomes of the leaf domatia of *C. canephora*, on the other hand, lined the adjacent epidermal tissue reaching the midrib. *C. liberica* and *C. liberica* var. *dewevrei* both possessed trichomes within the domatium and around the domatial pore.

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INTRODUCTION

Rubiaceae is one of the most distinct families of angiosperms (Kalnulinaisen *et al.*, 2013) that is known to possess small leaf cavities known as domatium. This structure is associated with various inhabitants including non-feeding mites which are often seen to have an interaction with these Rubiaceae species (Norton *et al.*, 2002).

In one of its member genera alone, *Coffea*, a widely cultivated perennial plant in many tropical and subtropical countries (Patay *et al.*, 2016; Dechamp *et al.*, 2015), domatia commonly exists as pit, pocket, or dense-hair tufts pits or pockets in the vein axils of the underside of leaves (O'Dowd & Wilson, 1989). It is also called acarodomatium as it is inhabited by predatory mites belonging to the families Phytoseiidae, Stigmacidae, Tarsonemidae, Winterschmidtidae and Oribatida for oviposition and during adverse conditions (Romero & Benson, 2005).